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BCM4312
PRODUCT Brief

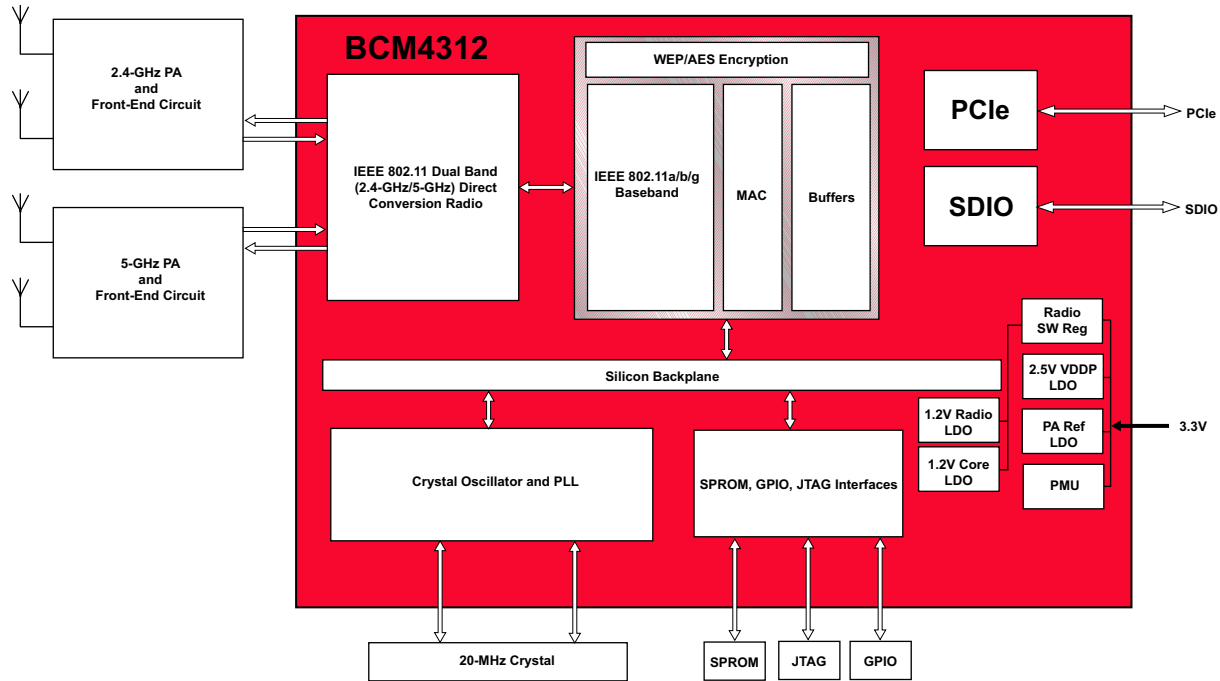# SINGLE-CHIP IEEE 802.11A/B/G MAC/BASEBAND/RADIO FOR PCI EXPRESS® AND SDIO APPLICATIONS

FEATURES

- **Slashes size, cost and power for PCs, DSL Gateways and Gaming Platforms**

- **Single-chip 11 a/b/g**
  - 802.11a/b/g MAC/PHY
  - Integrated dual-band a/b/g radio

- **PCIe™ 1.1 bus support**

- **SDIO (SD 4-bit, 1-bit, and SPI) host interface support at clock speeds up to 50 MHz**

- **Highly integrated with on-chip 1.2V regulators for radio and baseband requires only a single 3.3V external supply**
  - Two-layer, single-sided PCB
  - Reduces RBOM by 50% compared to previous 802.11b/g solutions

- **Combo Bluetooth® ready**
  - Broadcom's bluetooth coexistence support (2 and 3-wire interfaces)
  - Shared antenna architecture requires only two-antennas for WLAN and Bluetooth operation on a single card

- **Multi-BSSID support (up to 16 SSIDs)**

- **Consumes 40% less power than previous solution**

- **BroadRange™ and improved RX sensitivity**

- **Security: WEP, WPA Personal, WPA2 Personal, WMM, WMM-PS (UA-PSE), TKIP, and AES hardware acceleration**

SUMMARY OF BENEFITS

- **Reference Designs Available**
  - PCIe MiniCards
  - PCIe Half-MiniCards
  - SDIO modules
  - PCIe MiniCard Bluetooth Combo

- **Software Support**
  - Windows® 2K, XP, Vista
  - Linux® operating systems
  - IEEE 802.1x
  - CCXv4, CCX v5

- **In volume production today**

- **Package**
  - 10 mm x 10 mm 144-pin FBGA package (0.8 mm pitch)

- **Ordering information**
  - BCM94312KFBG - 10 mm × 10 mm 144-pin FBGA (lead free)

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BCM4312 Block Diagram

The BCM4312 provides one-chip IEEE 802.11a/b/g MAC, baseband, and direct conversion dual-band radio functions for wireless LAN connectivity supporting data rates from 1 Mbps to 54 Mbps in the 2.4-GHz or 5-GHz bands.

Broadcom's revolutionary one-chip architecture implemented in a bulk CMOS process greatly reduces the external components typically required for IEEE 802.11a/b/g implementations, resulting in significant cost, power, and footprint savings. The extreme integration of the BCM4312 enables low rest-of-BOM (RBOM), singled-sided, two-layer PCB-based designs.

A key feature of the BCM4312 is Broadcom's leading-edge BroadRange™+ digital signal processing technology for improved receive sensitivity, extending device range and enabling Wi-Fi users to maintain high-speed wireless connections throughout the entire home.

Two host interfaces are available on the BCM4312: PCI Express and SDIO. The PCI Express (PCIe) high-speed serial bus option supports x1 lane operation at 2.5 Gbps in each direction. Using the PCI Express interface offers substantial benefits over the conventional parallel PCI bus, including better Quality of Service (QoS), Error Detection, Power Management, Hot Plug/Hot Swap capability, and simplification of board layout.

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